WE CLAIM:

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1. A light source, comprising:

a semiconductor laser including a laterally confining optical waveguide having a reflecting first end and a second end, the optical waveguide having a first portion extending from the first end and a second portion extending from the second end, the first and second portions being coupled by a tapered waveguide portion having a varying lateral extent;

wherein a width of the first portion is less than a width of the second portion, the first portion filters lateral optical modes higher than a fundamental lateral optical mode, and an output is emitted from the second end of the optical waveguide.

2. A light source as recited in claim 1, further comprising an optical fiber having an input end, the optical fiber including a wavelength-selective reflector to provide reflectance at a wavelength of light amplified in the semiconductor laser, and a light coupling system disposed to optically couple light from the second end of the optical waveguide into the input end of the optical fiber.

3. A light source as recited in claim 2, wherein the wavelength-selective reflector is a Bragg fiber grating disposed within the optical fiber.

4. A light source as recited in claim 2, wherein a reflectance value of the wavelength-selective reflector and a separation distance between the the second end of the optical waveguide and the wavelength-selective reflector are selected to induce coherence collapse in light output from the laser.

5. A light source as recited in claim 4, wherein a separation distance between the first and second ends exceeds 1 mm.

6. A light source as recited in claim 4, wherein the reflectance value of the wavelength-selective reflector is less than 10%.

7. A light source as recited in claim 6, wherein the semiconductor laser has a gain spectrum having a peak gain wavelength, the peak gain wavelength being substantially equal to a peak reflectance wavelength of the wavelength-selective reflector at a semiconductor laser temperature between 0 °C and 50 °C.

8. A light source as recited in claim 4, wherein a separation distance between the second end of the optical waveguide and the wavelength-selective reflector is in the range 0.5 m to 2 m.

9. A light source as recited in claim 2, wherein the wavelength-selective reflector reflects light within a selected reflection bandwidth, and light emitted by the semiconductor laser has a spectral bandwidth approximately equal to the reflection bandwidth.

10. A light source as recited in claim 1, wherein the second end of the optical waveguide is provided with an anti-reflection coating.

11. A light source as recited in claim 1, wherein each of the first and second waveguide portions have a substantially uniform respective width.

12. A light source as recited in claim 1, wherein the tapered portion of the optical waveguide has a length of at least 100 µm.

13. A light source as recited in claim 1, wherein the laterally confining optical waveguide is formed in a planar structure.

14. A light source as recited in claim 1, wherein an optical mode of the laterally confining optical waveguide is transversely asymmetric.

15. A light source as recited in claim 1, further comprising a power supply coupled to supply electrical current to the laser.

16. A light source as recited in claim 1, further comprising a temperature controller coupled to maintain the laser at a selected operating temperature.

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17. A fiber optic system, comprising:

a communications fiber having a first and a second end, the communications fiber including an excitable fiber medium; and

a pump laser coupled to supply pump light to the excitable fiber medium, the pump laser including a laterally confining optical waveguide having a first end provided with a high reflector, and a second end, the optical waveguide having a first portion extending from the first end and a second portion extending from the second end, the first and second portions being coupled by a tapered waveguide portion;

wherein a width of the first portion is less than a width of the second portion, the first portion filters out lateral optical modes higher than a fundamental lateral optical mode, and an output is emitted from the second end of the optical waveguide.

18. A system as recited in claim 17, further comprising a first optical fiber coupled to the communications fiber, and having an input end, the first optical fiber including a wavelength selective reflector providing reflectance at a wavelength of light amplified in the pump laser, and a light focusing system

disposed to optically couple light from the second end of the optical waveguide into the input end of the first optical fiber.

19. A system as recited in claim 18, wherein the wavelength selective reflector includes a fiber Bragg grating disposed within the first optical fiber.

20. A system as recited in claim 18, wherein the wavelength selective reflector includes a second optical fiber optically coupled to the first optical fiber between the pump laser and the communications fiber, a fiber Bragg grating being disposed within the second optical fiber.

21. A system as recited in claim 18, wherein a reflectance value of the wavelength selective reflector and a separation distance between the second end of the optical waveguide and the wavelength selective reflector are selected to induce coherence collapse in light output from the laser.

22. A system as recited in claim 17, wherein the excitable fiber medium is a rare-earth doped fiber amplifier.

23. A system as recited in claim 17, wherein the excitable fiber medium is a rare-earth doped fiber laser.

24. A system as recited in claim 17, wherein light output from the pump laser induces Raman gain in the excitable fiber medium.

25. A system as recited in claim 24, wherein the excitable fiber medium is a fiber Raman amplifier.

26. A system as recited in claim 24, wherein the excitable fiber medium is a fiber Raman resonator.

27. A system as recited in claim 17, further comprising an optical transmitter coupled at a first end of the communications fiber to transmit optical signals along the communications fiber.

28. A system as recited in claim 17, further comprising an optical receiver coupled to receive optical signals at a second end of the communications fiber.

29. A system as recited in claim 17, further comprising a controller coupled to the pump laser to control operation of the pump laser.

30. A system as recited in claim 29, wherein the controller includes a power supply coupled to the pump laser to provide current to the pump laser.

31. A system as recited in claim 29, wherein the controller includes a temperature controller coupled to the pump laser to control a temperature of the pump laser.

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